15 AIRPLANE FLIGHT MANUAL (AFM)

The following sections provide guidance on material to be provided in the Airplane Flight Manual (AFM) to ensure that the appropriate information related to FGS operation is translated into air carrier operations. For additional guidance, note that AC 25.1581-1/AMJ 25.1581 addresses requirements of the AFM for transport category aircraft and distinguishes between those aircraft that are used in air carrier operations and those not in air carrier service.

The terminology used in the AFM should be consistent with the intended operational use.

Appropriate AFM information related to low-visibility operations is addressed in AC120-28D, AC 120-29A, and JAR-AWO Subparts 1-4.

15.1 Information Supporting Operational Use of the Autopilot

The airworthiness certification process will assess the effect of autopilot Failure Conditions as identified in Sections 13 and 14. If a specific Minimum Use Height[MUH] is necessary, then the height should be provided in the Limitations section of the AFM. If the design is such that the effects of Failure Condition(s) do not require establishment of a MUH, then the pertinent deviation profile or height loss information should be provided in the Normal or Non-normal section of the AFM, as applicable.

If MUH or a Height Loss value, is applicable, it should be specified as follows:

(a) Takeoff - Autopilot Engagement Altitude or Height.

NOTE: If minimum engagement altitude(s) or height(s) are not specified, then "maximum displacement deviation" information from a pertinent takeoff flight path and approach profile should be provided in the AFM Normal Procedures section, or in the associated Flight Crew Operation Manuals (FCOM).

(b) Cruise – Height Loss

(c) Approach - MUH or Height Loss

i) Approach – with Vertical Path Reference

- the MUH should be determined based on clearance above a 1:29 plane using the Deviation Profile Method.

ii) Approach – without Vertical Path Reference

- the Height Loss should be determined using the Height Loss Method

15.2 Limitations

The Limitations section of the AFM presents those FGS operating limitations appropriate to the airplane model as established in the course of the type certification process, and as necessary. FGS operational limitations (should any exist) should specify, any configuration/envelope restrictions, if and as applicable.

15.3 Non-normal/Emergency Procedures

The AFM should include Non-normal or Emergency procedures appropriate to the FGS identified during the certification program.

15.4 Normal Procedures

The normal procedures for use of the FGS should be documented in the AFM or FCOM, as appropriate. These procedures should be demonstrated during the type certification process.

In lieu of specification of minimum engagement altitude(s) or height(s) (see Section 15.1 above)], the AFM may alternately specify "maximum displacement deviations" from a specified takeoff flight path, or from a specified approach profile. This information may be based on typical departure or approach flight paths suited for the aircraft type and for failure conditions that are determined applicable to the type of FGS system and modes suitable for use.

The flight manual should include any necessary procedures for the use of the flight guidance system in icing conditions (including severe icing conditions). In particular, the procedures should include any necessary changes in operating speeds required either operationally or as a result of relevant design features of the speed protection function of the FGS; e.g., variations in minimum speeds as a function of de/anti-icing system selection; speed increments during approach and landing in turbulence.

15.4.1 Aircraft with Published Flight Crew Operation Manuals

The AFMs for aircraft for which the manufacturer has published a FCOM should contain essential information on normal operating procedures that are considered "peculiar" to the operation of the FGS for the aircraft type or are otherwise necessary for safe operation. FGS description and integration with the overall flight deck design philosophy, specification and operational procedures that are normally associated with flight guidance systems should be made available for inclusion in the FCOM.

If applicable, a FCOM may contain the "maximum displacement deviation" information described in Section 15.1, above, in either numeric or graphic form.

15.4.2 Aircraft without Published FCOM's

For aircraft that rely on the AFM as the sole operating manual, the AFM should contain operating information sufficient for flight crew reference. FGS description and integration with the overall flight deck design philosophy, specification and operational procedures that are normally associated with flight guidance systems should be made available so that an appropriately trained flight crew may operate the FGS under normal conditions.